

Applicant : Daniel J. Vavrick  
Serial No. : 10/658,128  
Filed : 09 SEPT 2003  
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Attorney Docket No.: NC 84208

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## REMARKS

Applicant through his attorney hereby responds to the Office Action mailed on April 27, 2007. Applicant acknowledges the rejection of all the pending claims under 35 U.S.C. § 103(a), respectfully disagrees with the rejection, and requests consideration of the following.

## A. Status of the Claims

At the time of the Office Action, claims 1 – 7, 9, 11, 12, 29, and 30 were pending. All pending claims were rejected under § 103 based on U.S. Patent No. 4,764,319 to Hightower Jr. et al. (Hightower) in view of U.S. Patent No. 4,963,203 to Halcomb et al. (Halcomb).

With this response, Applicant amends claims 1, 5, 6, 9, 11, 29, and 30 and adds new claims 31 and 32. Claims 2 – 4 and 7 (previously amended) are not currently amended.

## B. Claim Amendments

Claim 1 has been amended to eliminate the reference to an "additive" and to specify that the polymer element of the reactive material is halogenated. Claim 1 has also been amended to more clearly specify that it is the combination of the metal and polymer that are the reactive material rather than either one alone.

The amendment to claim 5 is to specify for this claim that the polymer constituent is at least partially fluoridated.

The amendment to claim 6 was typographical only. A redundant occurrence of the word "monomer" was removed and the spelling of "vinylidene" was corrected.

The amendments to each of claims 9, 11, 29, and 30 were to make each of these claims dependent on new claim 31 and, in accordance with the language of that claim, to change the word "additive" to "particulate."

## C. Response to Office Action

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The amendments to the claims set forth above are intended to provide clarity to the nature of Applicant's invention. The basis for the claim rejections indicate that there may be some misunderstanding in this respect.

Applicant's invention, as now clearly set forth in Claim 1, is a reactive material that comprises both of the metal and the halogenated polymer. It is not Applicant's intent to claim a material in which only one or the other of the materials is reactive, with the other element comprising a functional but chemically inert item. That is, one or the other of the foam and the polymer, or both, may be either reactive or relatively inert when used alone; in combination, they form a single reactive mixture.

While it is true that Hightower mentions possible reticulated metals in his propellant that are combustible, Hightower does not teach that the metal is required to be flammable. Moreover, nowhere does Hightower teach that the reticulated metal, in combination with a polymer, must form a reactive material.

The difference between the teaching of Hightower and Applicant's claimed invention is further highlighted by the fact that Hightower teaches that one who desires a noncombustible reticulated structure may use titanium. See, Hightower at col. 2, line 64, through col. 3, line 1. In contrast, Applicant teaches and claims (see particularly claim 2) that titanium can be used as one component of the claimed reactive material. In the context of reactive materials, Hightower's teaching *vis-à-vis* Applicant's invention is self-evidently contradictory. The conundrum is resolved, however, because Hightower is referring to combustion rather than reactivity – Hightower does not teach reactive materials.

This lack in Hightower is not cured by Halcomb. First, Halcomb's teaching is limited to thermites consisting of specifically defined materials. See Halcomb at col. 2, lines 30 – 47. Notably, this listing excludes any mention of a polymer, much less a halogenated polymer. Indeed, the listing also excludes several of the metals or metal alloys specifically identified by Applicant. A prior art reference that explicitly excludes materials specifically included in an invention cannot render the invention unpatentable under § 103(a).

Applicant respectfully submits that Halcomb does not teach the use of Teflon® as a component of a reactive material. The mention of Teflon® in Halcomb at col 1, lines 36 – 41, is a reference to "an easily decomposable material . . . that would produce gas upon decomposition and/or reaction." This is reference to the production of gas, not to

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the use of Teflon® as a reactive material. Even more important, however, is that Halcomb specifically teaches that materials such as this polymer "adversely the properties of the [desired thermite] composition. . . ." Halcomb col. 1, lines 39 – 41.

In sum, Halcomb does not teach any reactive composition comprising a metal foam and a polymer. Halcomb's reference to the polymer is negative, teaching away from its use, and what teaching is present teaches gas production, not use as a reactive material component. The reference, by specifically including only certain substances also specifically excludes substances disclosed and claimed by Applicant.

Applicant's invention describes and claims a reactive composition comprising at least two materials. As the Examiner makes clear, Hightower does not teach that the metal foam is part of a reactive material and, in fact, Hightower, for at least one substance claimed by Applicant, directly teaches away from the use of a metal foam as a reactive material. Halcomb explicitly excludes the use of a component that Applicant directly claims. Halcomb teaches that use of a polymer such as Teflon® is disadvantageous. With neither of the references teaching reactive compositions and with each reference specifically teaching away from and specifically excluding a component claimed by Applicant, the references do not render the claimed invention obvious.

#### D. Conclusion

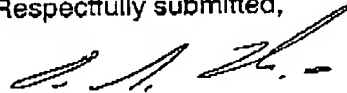
Applicant has established that the cited references do not render the claimed invention unpatentable. The amendments to the claims, which add no new matter,

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specifically point out and claim as the invention the combination of two materials to create a novel reactive material having specific qualities. Applicant submits that the claims are in condition for allowance, and notice thereof is respectfully requested.

Respectfully submitted,



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